POLICY RESEARCH WORKING PAPER 1287

Unstable Inflation and Seignorage Revenues in Latin America

How Many Times Can the Government Fool People?

Jacques Morisset

Governments adopt monetary policies expected to be unsustainable in the long run because in the short term they can [illegible] and therefore increase seignorage revenues. But over time the market learns [illegible]

The World Bank
Latin America and the Caribbean
Country Department IV
Country Operations Division
April 1994

Unstable Inflation and Seignorage Revenues in Latin America: How Many Times Can the Government Fool People? [1]

Jacques Morisset

The World Bank
LA4CO
Washington D.C.

1 I would like to thank Philippe Auffret, Marc Chesney, Alejandro Izquierdo, Danny Leipziger, and Jesko Hentschel for helpful suggestions as well Jim Hanson for useful discussions on this issue. All remaining errors are mine.

Unstable Inflation and Seignorage Revenues in Latin America:
How Many Times Can the Government Fool People?

TABLE OF CONTENTS

SUMMARY

During the last twenty years, high and extremely volatile inflation rates in Latin America generally have been associated with unstable monetary policies and the (temporary) use of inflationary revenues to finance fiscal deficits. At the same time, there appears to be a widespread agreement that high inflation is bad for economic development and growth. Thus, it remains unclear why governments have adopted unstable monetary policies in light of the fact that their long-run unsustainability is known from the beginning.

In this paper, we argue that governments follow unstable monetary policies principally in order to maximize their inflationary revenues. We do so because explanations based on irrationality or on institutional and political shocks as suggested by a recent trend of the literature are not entirely convincing. Temporary unstable monetary policies are optimal because people tend to revise their expectations (slower)faster in periods of (des)accelerating inflation as the cost of collecting information is (increased)reduced compared to other welfare losses. When the rate of inflation is relatively high, a restrictive monetary policy is implemented so that people can reconstitute monetary balances, and when the rate of inflation is low, an expansive monetary policy is developed to confiscate existing real balances.

How long can governments benefit from unstable monetary policies? They may appear successful for some time in *fooling* people --by adopting temporary reforms and restoring confidence-- but the repetition of this mechanism reduces the reputation of the government. Ultimately, the reaction of private agents to the prospect of inflation becomes so rapid and sophisticated that even small fiscal gaps--or other shocks--produce precipitous declines in money demand. Over time, private agents learn to anticipate the relationship between unstable inflation and monetary policy and progressively reduce their real monetary balance. In the end, the optimal inflation rate tends toward its steady-state value as found by Friedman 20 years ago.

A small dynamic model is first developed to stylize the facts described above and then applied to Argentina.

1. Introduction

Over the last 20 years, Latin American countries have endured high inflation -- on average 243 percent per year--, but contrary to the conventional wisdom they also went through periods of relatively low inflation. As a result, the volatility of inflation has been extremely high in countries such as Argentina, Bolivia, Brazil and Peru (Table 1). High and variable inflation in Latin America generally has been explained by the close relationship between inflation and monetary aggregates. This basic argument is well-known and has been explored from the seminal paper of Cagan (1958) to the recent survey of Vegh (1992).

The puzzling question is why have rational governments adopted unstable monetary policies given the long-term costs of inflation on economic growth and welfare. These unstable policies should have been abandoned immediately if the unsustainability of these policies was known from the beginning. A partial answer can be found in the fact that governments can benefit from money creation to finance their deficits for limited periods of time.

Generally, the economic literature has explained the (temporary) use of inflationary financing by the irrationality of governments (e.g. Sargent and Wallace (1981)) faced with short-term constraints, or by political and institutional shocks (see Cukierman, Edwards, and Tabellini (1992)). These explanations, as discussed below, are not entirely convincing. On the contrary, this paper argues that the fluctuations in monetary financing are endogenous and can be understood in terms of rational behavior from governments. A simple dynamic model is developed in which a government maximizes seignorage revenues by changing monetary policy over time without any time inconsistency. More specifically, we will show that the Government may benefit from unstable monetary policies during limited periods of time, but, in the end, the rate of inflation should tend toward its steady-state level as found by Friedman 20 years ago. This is consistent with the Latin American experience of the last two decades.

The paper proceeds as follows. In Section 2, we expose the simple fact, shared by most Latin American countries, that inflation and seignorage revenues were extremely volatile over the last 20 years. Alternative explanations are explored ranging

TABLE 1: Inflation Rate in 10 Latin American Countries (1970-91)
(In Percentage)

Country	Mean (1)	Standard Deviation (2)	Volatility (2)/(1)
Argentina	594.9	1807.3	3.04
Bolivia	628.3	2577.8	4.10
Brazil	348.9	874.9	2.50
Chile	94.3	152.6	1.61
Columbia	22.2	6.8	0.31
Ecuador	25.6	19.8	0.78
Mexico	40.7	39.9	0.96
Peru	597.8	1656.1	2.77
Uruguay	62.8	26.5	0.42
Venezuela	17.0	18.9	1.12

Source: IFS, Consumer Price Index, quarterly data.

TABLE 2: Contemporaneous Correlation between Nominal Quarterly Monetary Growth and Inflation, 1970-91

Country	Correlation
Argentina	0.47
Bolivia	0.83
Brazil	0.58
Chile	0.63
Columbia	0.10
Ecuador	0.18
Mexico	0.18
Peru	0.59
Uruguay	0.11
Venezuela	0.06

Source: IFS.
Note: Nominal monetary growth is defined as the percentage quarterly variations in M1, and inflation as the quarterly change in CPI.

from the irrationality of the governments to changes in institutional and political factors. In Section 3, we develop a simple model in which a government maximizes monetary revenues over time by adopting temporary unstable monetary policies. Finally, Section 4 contains our concluding remarks.

2. Inflation Volatility and Seignorage Revenues: Some Latin American Evidence

Inflation has been extremely volatile in Latin America over the last twenty years. While the changes in inflation can be explained by a variety of factors ranging from changes in international prices to labor market conditions, we consider that this instability has been generated principally by unstable monetary policies. Simple contemporaneous correlations support the evidence that nominal quarterly monetary growth has been a key factor in explaining inflation fluctuations in Argentina, Bolivia, Brazil, Chile and Peru over the last twenty years (Table 2).[2] These results are confirmed by the recent and more sophisticated statistical analysis carried out by Phylaktis and Taylor (1993).

Frequently, unstable monetary policies have been associated with fiscal imbalances and high and variable inflationary revenues in Latin American countries. During the period 1970-91, monetary financing averaged 16 percent of total public financing in 10 Latin American countries; compared to only 2.0-2.5 percent in most OECD countries.[3] Of particular interest is that monetary revenues within countries have also been very volatile over time, the standard deviation of monetary financing being greater than its average in 7 out of 10 countries (See Table 3).

---

2 The positive but low correlation found in Mexico and Venezuela reflects the importance of external factors on domestic prices due to the prominence of the oil sector in these economies. Hanson (1985) also emphasized the importance of the costs of imported inputs in explaining inflation in several Latin American countries.

3 Note that the extent to which Latin American countries used money creation to finance their expenditures varied quite widely, with Argentina relying on seignorage to cover over 50 percent of its revenues and Mexico only 5 percent.

TABLE 3: Monetary Revenues in 10 Latin American Countries (1970-91) (In Percentage) a/

Country	Mean (1)	Standard Deviation (2)	Volatility (2)/(1)
Argentina	52.9	76.5	1.44
Bolivia	22.2	43.8	1.97
Brazil	22.9	22.8	0.99
Chile	30.0	13.6	0.45
Columbia	12.9	37.7	2.91
Ecuador	12.9	15.6	1.20
Mexico	4.9	22.2	4.74
Peru	26.4	19.1	0.72
Uruguay	16.1	16.1	1.01
Venezuela	6.0	18.9	3.13

Source: IFS, quarterly data.

a/ Monetary financing is broadly defined as the ratio of the increase in base money to total public revenues. This can overstate monetary revenues since variations in monetary base can also be the result of changes in international reserves (in fixed exchange rate regimes) and changes in interest paid on reserves.

Traditionally, the volatility of monetary financing has been explained by the myopia of governments, which faced to short-term constraints, are unable or unwilling to consider the long-term costs associated with high and volatile inflation. Although several attempts have been made to show that inflation is not necessarily bad for a country[4], by now, there appears to be widespread agreement that high and volatile inflation worsens economic development and growth. However, as pointed out by Alesina and Drazen (1992), explanations based on irrationality, such as waiting to stabilize until "things get really bad", are unconvincing: since the deterioration in the fiscal situation can be foreseen, the argument depends on the countries that use inflationary financing being more irrational than others.

4 See , for example, the structuralist view on inflation, particularly in the Latin American context.

A recent trend in the economic literature has focused on political and institutional shocks, arguing that for these reasons Latin American countries have to rely transitorily on inflation to finance their public expenditures. Along this line of thought, Cukierman, Edwards and Tabellini (1992) have recently suggested that unstable and polarized political systems *have constrained* Latin American governments to use monetary financing periodically because of the inefficiency of their tax system. Alesina and Drazen (1992) have also studied a theoretical model with seignorage being the consequence of the inability to reach policy decisions.

This approach subscribes to the view that political stability and institutional reforms more than reflecting the willingness of different groups to adhere to a social contract are key indicators of economic stability: it is a noble model in which political and economic factors behave in a systematic and purposeful way. Accordingly, Easterly and Schmidt-Hebbel (1991) have reviewed that seignorage has been a large source of temporary revenues during time of economic and political crisis: surges in seignorage appear in Chile under Allende in 1971, in Mexico in 1982, and in Argentina in 1975 and 1983. Not surprisingly, however, the above approach fails to explain several inflationary episodes in Latin America during the last twenty years. Explanations that give a key role to exogenous shocks leave unexplained both why variations in inflationary financing do not necessarily coincide with significant observable changes in external circumstances and why stable monetary financing is not always observed in politically secure countries. For example, as illustrated below, inflationary financing has been extremely volatile in Argentina during 1987-89 in the absence of significant observable political and institutional changes. Similarly, the relative political stability in Uruguay, Mexico, Ecuador, and Chile since the early 1980s did not correspond to more stable monetary revenues over time compared to politically-distressed countries such as Peru or Brazil (see Table 3).

This paper argues that the volatility of monetary financing can be understood in terms of a government's strategic behavior. This idea was first discussed by Sjaastad (1976). Although many would object that governments are not motivated by the desire for seignorage, at least not directly, we believe it has certainly been a conscious part of public policy in Latin America due to its importance in public budgets. This approach has some major policy implications since, in contrast to the approach described in the preceding paragraph, it suggests that a government's capacity to

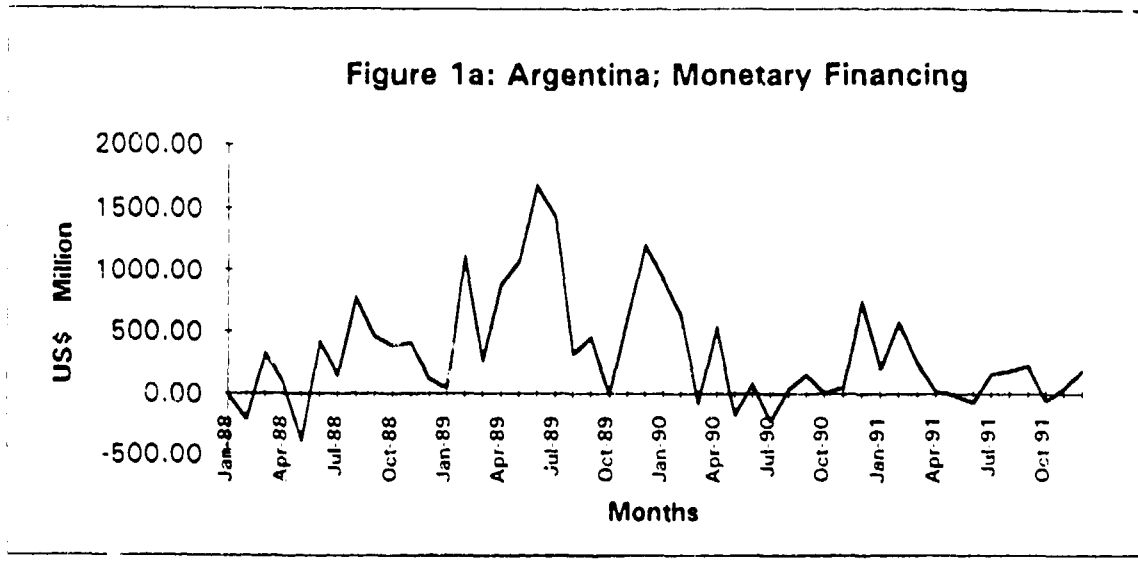


Figure 1a: Argentina; Monetary Financing
2000.00
1500.00
1000.00
500.00
0.00
-500.00
US$ Million
Jan-88
Apr-88
Jul-88
Oct-88
Jan-89
Apr-89
Jul-89
Oct-89
Jan-90
Apr-90
Jul-90
Oct-90
Jan-91
Apr-91
Jul-91
Oct-91
Months

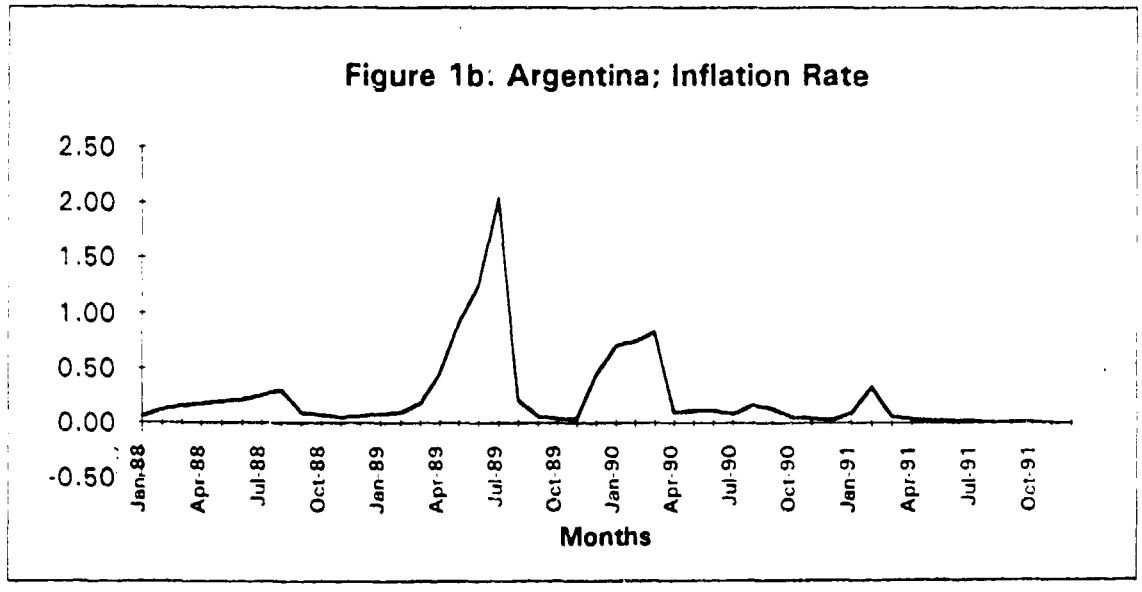


Figure 1b: Argentina; Inflation Rate
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
Jan-88
Apr-88
Jul-88
Oct-88
Jan-89
Apr-89
Jul-89
Oct-89
Jan-90
Apr-90
Jul-90
Oct-90
Jan-91
Apr-91
Jul-91
Oct-91
Months

collect the inflation tax *determines* rather than *is determined* by other sources of financing, suggesting that institutional changes, required to raise alternative sources of public revenues (e.g. privatization), follow rather than precede the elimination of inflationary revenues. To make this more concrete, Argentina provides an excellent example of such a behavior.

Revenues from monetary financing went through sharp cycles in Argentina during most of the 1980s (see Figure 1).[5] Traditionally, the government finances went under pressure at the end of the year because of seasonal factors such as payments of the extra-month salary and social security. To collect revenues from monetary financing, the rate of inflation needed to increase dramatically (see Figure 1b). After this first phase of expansive monetary policy, the Government started a new adjustment program aimed at reducing the demonetization process and restoring the private sector's confidence. This new program was generally accompanied by a change in administration so that the public was uncertain about its true preferences; that is, whether this was a no-nonsense government or merely one pretending to tackle the serious fiscal problems. The government appeared successful for some time in reducing inflation which sustained public confidence, fueled money demand, and thus momentarily postponed the eventuality of a tremendous inflationary surge.

This strategy was repeated successfully in 1988 and early 1989 as depicted in Figure 1a. However, the reputation of the Central Bank progressively declined and, by end of 1989, the reaction of private agents to the prospect of any inflation tax became so rapid and sophisticated that even small fiscal gaps--or other shocks-- produced precipitous declines in money demand. The demonetization process was so intensive during the course of 1989 that the authorities progressively realized that financing deficits by printing money resulted in an increase rather than a decrease in the fiscal

---

5 In Figure 1, revenues from monetary creation have been adjusted for the variations in international reserves (this was not done in Table 3). In many instances the changes in the monetary base were due to variations in money demand that are provided by purchases of international reserves, rather than by changes in fiscal policies. Therefore, reserve purchases or sales due to private sector operations have been subtracted from the series of revenue from monetization.

gap.[6] To halt this process, the Government had no alternative left than to adjust its fiscal deficit, beginning with the elimination of the quasi-fiscal deficit on January 1, 1990 and followed by several structural measures such as privatizations and administrative and tax reforms in 1990 and 1991.

3. A Small Model

The model developed hereafter can be viewed as an attempt to stylize the facts described in the preceding section. We will show that the government maximizes seignorage revenues over time by adopting an unstable monetary policy, but that in the end the optimal inflation rate tends toward its steady-state-level. Unlike the majority of studies on seignorage, we chose not to limit the analysis to the steady state for two reasons: (1) we found it difficult to think about policy commitment in the steady state, and (2) we found it easy to lose sight of the fact that governments benefit from the initial issue of money when the focus is on the steady-state.

The conventional approach --and the simplest one-- of the inflation tax can be summarized as follows:

$$(1) \quad S_t = \mu_t m_t$$

$$(2) \quad m_t = \alpha e^{-b\pi^e t}$$

$$(3) \quad \mu_t = \pi_t$$

$$(4) \quad \pi^e_t = \pi_t + (1-\sigma)D\pi_t$$

where μ is the growth rate of nominal money, m the real money stock, π^e_t the expected rate of inflation, and π_t the observed rate of inflation. [7]

---

6 Higher inflation resulted in lower tax revenues due to the "Olivera-Tanzi" effect, and in higher interest rates charged on the indexed domestic debt.

7 D denotes d(.)/dt

At this stage the model is standard and therefore briefly described. Equation (1) defines seignorage as the monetary growth times the real stock of money held at the beginning of period. Equation (2) states that the real money demand is a function of the expected rate of inflation. By convention, we used the semi-log form popularized by Cagan. In equation (3), the observed inflation rate is equal to monetary growth. Finally, the expected inflation is defined in equation (4) as the average between the existing rate of inflation adjusted for the change in inflation observed during t and t-1. [8]

Thus, the inflation rate maximizing seignorage can be written as:

(5) $\pi^*_t + (1-\sigma)D\pi^*_t/dt - (1/b)\ln(\pi^*_t) = k$

where k is a constant

In accordance with the assumptions of the standard model, the optimum inflation rate converges (or explodes) toward its steady-state value without fluctuations (for a numerical illustration, see Figure 2). The steady-state value equals the inverse of the semi-elasticity of money demand ($\pi^* = 1/b$)[9] with the convergence speed positively correlated to the degree of expectation adjustment (σ) and to the semi-elasticity of the money demand with respect to expected inflation (b). These results are conventional and correspond to those found by Bailey (1956) and Friedman 30 years ago.

The standard model presents, at least, one important caveat. The absence of fluctuations in the inflation path over time contradicts the empirical evidence reviewed in the preceding section. The next step is therefore to change the model in that direction; this can be done by simply modifying the expectation mechanism chosen in equation (4).

---

8 This expectation mechanism corresponds to the adaptive one only when the first two lagged terms of inflation are taken into account.

9 The steady state value of the optimal inflation rate is determined as follows: $\pi^* - (1/b)\ln(\pi^*) = k$. Then, taking the first-derivative of each side of the above equation, we can rewrite the optimal inflation rate as: $\pi^* = 1/b$; i.e. the inverse of the semi-elasticity of the money demand.

In his pioneering work, Cagan was careful in pointing out the limitations of an expectations mechanism exclusively based on the gap between the actual and past inflation rates because people *systematically* underestimate the future inflation rate in periods of accelerating inflation, but they overestimate it in periods of decelerating inflation. This systematic behavior is inconsistent with *risk-averse* agents. Rather, we should expect that private agents will attempt to collect more information in countries with high and volatile inflation. The recent theoretical literature has described the central role of information costs in the formation process of inflation expectations (see Benabou (1992) for a summary). In times of accelerating inflation, buyers react by comparing more prices and collecting more information on the inflationary process; the main reason being that the information costs relative to other welfare losses are reduced in periods of accelerating inflation. Private agents become more experienced and make revisions faster when prices rise at a faster rate. To capture this idea, the expectations mechanism depends not only on the variation in inflation ($D\pi_t$), but also the rate of change in inflation ($D^2\pi_t$). Thus,

$$(4b) \quad \pi^e_t = \pi_t + (1-\sigma)D\pi_t + \beta D^2\pi_t \qquad \text{with } \beta > 0$$

We should point out that this is only one approach that can be taken in attempting to model the behavior of the coefficient of expectations (see Khan (1977)). Equation (4b), however, seems to be the simplest form.

The influence of the rate of change in inflation on expectations can be illustrated by the money demand behavior during periods of volatile inflation. One extreme case can be found during hyperinflationary episodes --uncontrolled acceleration of the inflation rate-- when unexpected large portfolio shifts occur from domestic currency toward indexed assets or foreign assets.

The relationship between the rate of change in inflation and money demand can be traced out for the case of Argentina. An equation which explains well the evolution of real money demand over the last 20 years is the following[10] :

---

10 We proceed by substituting equation (4b) into equation (2). The resulting equation was estimated with the ordinary least square method (OLS), but adjusted for autocorrelation (AR1),

(continued...)

(2') $\ln(M1)_t = \ln(\alpha) - b(\pi_t + (1-\sigma)D\pi_t + \beta D^2\pi_t)$

$b = 0.593; \quad \sigma = 0.154; \quad \beta = 0.542;$
$\quad (7.33) \qquad (5.01) \qquad (3.58)$

with $AdjR^2 = 0.962; \quad DW = 2.11$

The econometric evidence suggests that fluctuations in real money demand can be partially explained by variations in the acceleration of inflation. This result seems robust to changes in the number of lags and/or in the omission of different explanatory variables. For example, we tested the equation with dummy variables to capture eventual structural changes due to different exchange rate regimes, and the estimated coefficients did not appear qualitatively different. The semi-elasticity of money demand (b) is low as generally found in highly inflationary countries (see Easterly and Schmidt-Hebbel (1991)).[11] The low value of the coefficient σ reflects the fact that private agents were extremely fast in revising their expectations in Argentina.

We now turn to the question to how the new expectation mechanism modifies the optimal inflation behavior in comparison to the one obtained by using the standard model. Substituting (4b) into the small system (1)-(3), the rate of inflation maximizing seignorage revenues is defined by:

(5b) $\beta D^2\pi^*_t + (1-\sigma)D\pi^*_t + \pi^*_t - (1/b)\ln(\pi^*_t) = k$

10(...continued)
over the 1972(1)-1992(12) period. The dependent variable was defined as the natural logarithm of real M1, and inflation as the monthly variation of the CPI. We used monthly data.

11 The relatively low elasticity of money demand to inflation suggests that the seignorage maximizing inflation rate is high, about 166 percent. According to Easterly and Schmidt-Hebbel (1991), such a result is a regularity of high inflationary countries. However, it is worth underscoring that our result is substantially lower than the one obtained with a Cagan function money demand, equivalent to 670 percent (available upon request from the author). This difference may be explained by the inclusion of the rate of change in inflation as an explanatory variable rather than a Cagan-function money demand. The introduction of the rate of change is similar to the idea developed by Easterly, Mauro, Schmidt-Hebbel (1992) who argue that the semi-elasticity of money demand is falling with respect to inflation. Both developments lead to the conclusion that the maximizing inflation rate is overestimated by using the Cagan-function money demand.

At first sight, the non-linearity properties of equation (5b) seem to prevent the (easy) determination of the optimal path followed by inflation. However, numerical simulations can be used to identify such a behavior. Thus, modifying equation (5b) from continuous to discrete time and approximating $D^2\pi^*_t$ by $\pi^*_{t+1} - 2\pi^*_t + \pi^*_{t-1}$, we can rewrite (5b) as:

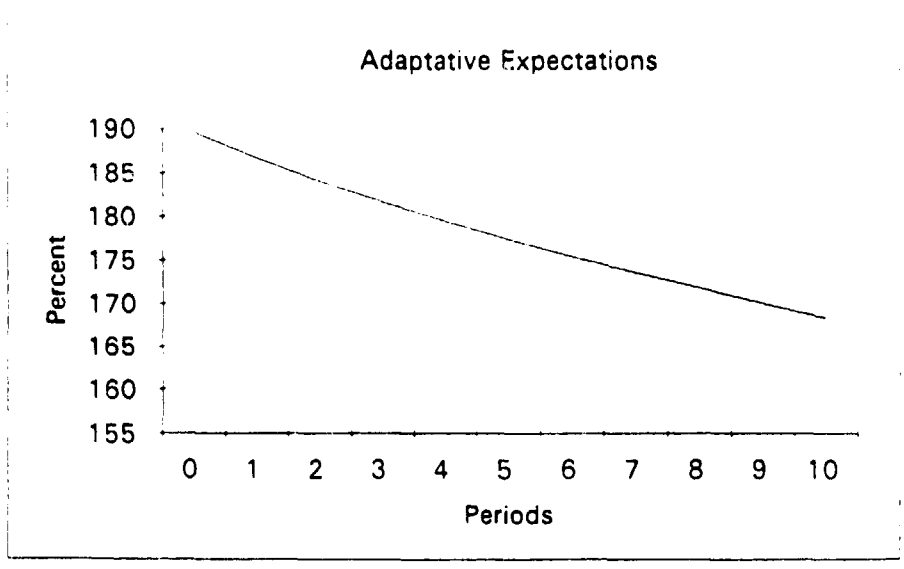
$$(6b) \quad \pi^*_{t-1} = [1/(\beta-(1-\sigma)][\ -\pi^*_t -(1-\sigma)\pi^*_t + k + (1/b)\ln(\pi^*_t) - \beta(\pi^*_{t+1} -2\pi^*_t)]$$

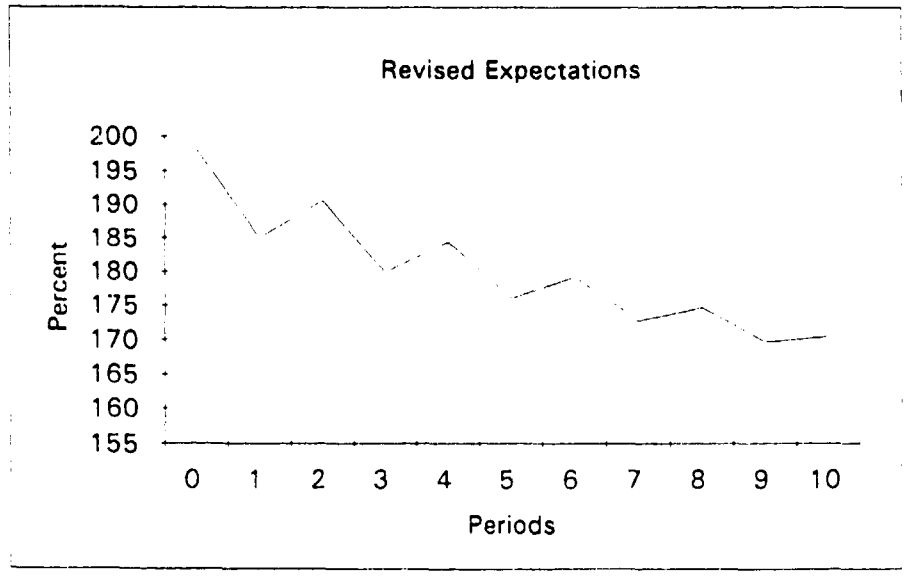
The lagged rate of inflation is a nonlinear function of the current inflation rate (π_t) and the future inflation rate (π_{t+1}). The optimal inflation behavior can be determined backwards assuming that the steady-state value of inflation equals 1/b; i.e. the inflation rate at time t determined the inflation rate at time t-1 and so on. Note the magnitude and the frequency of the fluctuations in the optimal inflation rate depend on the extent to which people take into account the rate of change in inflation into their expectations -- the value of the parameter β. At the limit, with simple adaptive expectations ($\beta = 0$), the optimal inflation rate tends to its steady-state value without fluctuations as shown in Figure 2.

The optimal inflation path derived from this exercise is illustrated in Figure 2 for the case of Argentina. The coefficients are those estimated earlier. One of the striking characteristics is that the optimal inflation rate closely followed the path observed during the second half of the 1980s, though the steady-state value appears to be higher than in reality (see Figure 1b). At the beginning the fluctuations are very large, then they progressively decline, and finally the inflation rate converges toward its steady-state value.

The model suggests that an expansive monetary policy is optimal when the rate of inflation is relatively low in order to confiscate the existing real balances. Alternatively, when the inflation rate is high, the authorities should adopt a restrictive monetary policy. Such a behavior does not suffer from a time inconsistency problem since when the policy is evaluated in each period; it is not systematically decided to confiscate the existing real balances (by running high inflation) and promise lower inflation in the future. Over time, however, the fluctuations in the rate of monetary growth should

Figure 2:
Inflation Rate : Simulations





Assumptions: *b = 0.6* *Sigma = 0.1*
k = 0.8
Inflation (steady-state = 1/b) = 166%

decrease to allow people to reconstitute their real monetary balances. Expansive monetary policy would only lead to the acceleration of demonetization, reducing rather than increasing seignorage revenues. As described earlier, such a behavior closely corresponds to the Argentine experience during the second half of the 1980s.

4. Concluding Remarks

During the last twenty years, inflation rates have been high and extremely volatile in Latin America. At the same time, monetary revenues (seignorage) accounted for a substantial share of public financing but with relatively large fluctuations over time. If the association between high inflation and seignorage has been fertile ground for researchers, it remains unclear why governments choose to adopt unstable monetary policies, specifically when it is known that they are unsustainable in the long run.

In this paper, we have argued that governments follow unstable monetary policies principally in order to maximize seignorage revenues. We also consider that the use of inflationary finance can also be partially explained by institutional and political factors as suggested by a recent trend of the literature and partially by the irrational behavior of the authorities. Temporary unstable monetary policies are optimal if people tend to revise their expectations (slower)faster in periods of (des)accelerating inflation. When the rate of inflation is relatively high, a restrictive policy should be implemented so that people can reconstitute monetary balances, and when the rate of inflation is low, an expansive monetary policy should be developed to confiscate existing real balances. However, this mechanism can not be repeated indefinitely because people learn to anticipate unstable inflation, and they progressively reduce their real monetary balances. In the end, the optimal inflation rate tends toward its steady-state level to stop demonetization. Such a maximizing behavior has been tested numerically in the case of Argentina, and the results correspond to those predicted by the model.

To the extent that changes in monetary policies depend on the government's ability to manage the cost-benefit of inflation over time, one can wonder whether inflation will reappear in currently successful countries such as Argentina, Bolivia, Chile, or Peru? The authorities may actually be tempted to develop unstable monetary policies on the belief that people gradually loses their capacity to anticipate the linkage between

monetary policy and inflation. Similarly, how long will the Brazilian Government be able to follow unstable monetary policies without generating hyperinflation? Over the last few years, several adjustment plans have successively failed, but the public seems to remain uncertain whether the next program will be successful in reducing inflation, sustaining public confidence, fueled money demand (as well as public bonds demand), and thus momentarily postponing the eventuality of a tremendous inflationary surge.

The argument developed in this paper relies on the assumption that inflation volatility is the result of a government's strategic behavior in managing the cost and benefits of monetary financing. This view is obviously extreme since, in reality, other factors such as adverse economic shocks or unstable political conditions also explain variations in the rate of inflation. Nonetheless, the close relationship between inflation and monetary growth as well as the weight of monetary financing in total public revenues give support to this explanation in Argentina, Bolivia, Brazil, Chile, and Peru.

Bibliography

Alesina A. and A. Drazen (1992), "Why Are Stabilization Delayed?" American Economic Review, Vol.81, N.3.

Bailey (1956), "The Welfare Cost of Inflationary Finance", Journal of Political Economy,

Benabou R., "Inflation and Markups: Theories and Evidence from the Retail Trade Sector", European Economic Review, 1992.

Bruno M. (1991), High Inflation and the Nominal Anchors of an Open Economy", Princeton Essays in International Finance, N.183.

Canzoneri M. and B. Diba (1992), "The Inflation Discipline of Currency Substitution", European Economic Review, 36.

Cukierman A., S. Edwards, and G. Tabellini (1992), "Seignorage and Political Instability", American Economic Review.

Dornbusch R. and S. Fischer (1991), "Moderate Inflation", World Bank Working Paper.

Easterly W. and K. Schmidt-Hebbel (1991), " The Macroeconomics of Public Sector Deficits: A Synthesis", World Bank Working Paper, N.775.

Easterly W., P. Mauro, and K. Schmidt-Hebbel (1992), "Money Demand and Seignorage-Maximizing Inflation", World Bank Working Paper, N.1049.

Friedman M. (1971), "A Monetary Theory of Nominal Income", Journal of Political Economy, 79, N.2, March-April.

Hanson J.(1985), "Inflation and Imported Input Prices in Some Inflationary Latin American Economies", Journal of Development Economics, 18.

Khan M. S. (1977), "Variable Expectations and the Demand for Money in High Inflation Countries", The Manchester School.

K. Phylaktis and M. Taylor (1993), "Money Demand, the Cagan Model and the Inflation Tax: Some Latin American Evidence," Review of Economics and Statistics.

Sargent T. and N. Wallace (1981), "Some Unpleasant Monetarist Arithmetic", Federal Reserve Bank of Minneapolis Quarterly Review, January.
Sjaastad L. (1976), Why Stable Inflation Fail: An Essay in Political Economy", in Inflation in the World Economy, Parkin and Zis (eds).
Vegh C. (1992), Stopping High Inflation, IMF Staff Paper,

C:\jan94\INFL1.2

Policy Research Working Paper Series

	Author	Date	Contact for paper
	Ahmed Galal	March 1994	B. Moore 38526
	Yang Qian Ruqbi Duncan	March 1994	S. Lipscomb 33718
	Wendy E. Takacs	March 1994	M. Pateña 37947
	Emmanuel Jimenez	April 1994	L. Longo 37786
	Donald Frederick Larson	April 1994	A. Kim 33715
	Dipak Das Gupta Benoy Das Gupta	April 1994	B. Kim 82467
	William Easterly	April 1994	R. Martin 31320
		April 1994	P. Sintim-Aboagye 38526
		April 1994	S. Harbi 37143
		April 1994	D. Jenkins 37890